

**REMARKS**

Claims 1-8 are pending. Claims 1 and 5 are amended hereby.

Claims 1, 3-5, 7 and 8 were rejected under 35 U.S.C. § 102(b) as being anticipated by *Zhou et al.* (U.S. Application Publication 2002/0146259 A1). Favorable reconsideration of this rejection is respectfully requested.

*Zhou et al.* discloses nickel endless belts made by electroforming. The reference discloses the belts as comprising a crystal orientation ratio  $I_{(200)}/I_{(111)}$  of 3 or more, a release layer, and an elastic layer between the release layer and the metal base. *Zhou et al.* also discloses a belt (Example 2) with a crystal orientation ratio  $I_{(200)}/I_{(111)}$  of 80 and containing 0.04 wt% carbon and 0.0 wt% manganese.

*Zhou et al.* corresponds to U.S. Patent No. 6,564,033 which is discussed in the present specification. Applicants amend claims 1 and 5 to specify that the crystal orientation ratio is more than 80. Accordingly, the amended claims are not anticipated.

Claims 2 and 6 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Zhou et al.* *Zhou et al.* does not explicitly disclose a belt with a crystal orientation ratio of 100 or more. The Examiner argues that the disclosure in *Zhou et al.* of a crystal orientation range  $I_{(200)}/I_{(111)}$  of 3 or more includes the claimed range of 100 or more and, therefore, the claimed range would have been obvious to one of ordinary skill in the art at the time of the invention. This rejection is respectfully traversed.

*Zhou et al.* teaches away from using a crystal orientation ratio  $I_{(200)}/I_{(111)}$  of more than 80, and particularly 100 or more. In addition, the claimed range provides unexpected results.

In the present invention, to control the crystal orientation ratio  $I_{(200)}/I_{(111)}$ , a nickel plating bath is adjusted by using a primary brightener and a secondary brightener. In particular, the crystal orientation ratio  $I_{(200)}/I_{(111)}$  is raised to a higher numerical value by using alkynediol as the secondary brightener (page 22, lines 3-18). Thus, the repetition durability times of the belt of the present invention can be greatly improved to 250 thousand to 1 million times or more as described in Table 1, Figs. 3 and 4.

On the other hand, in the belt of Zhou, the maximum value of the crystal orientation ratio  $I_{(200)}/I_{(111)}$  is at most 80.

According to paragraph [0040] of Zhou, sulphur (S), carbon (C), carbon/sulphur ratio (C/S ratio) and the crystal orientation ratio  $I_{(200)}/I_{(111)}$  have a correlation with each other and, for example, the crystal orientation ratio  $I_{(200)}/I_{(111)}$  is 3 or more if the C/S ratio is set at 2 or more. In addition, if the content of C exceeds 0.08%, stable crystal growth cannot be expected. However, these matters do not agree with claim 3 or 7 (C = 0.03% to 0.10%) of the present application. Paragraph [0040] of Zhou teaches away from claim 3 or 7 of the present application. Therefore, claim 3 or 7 of the present application is not obvious over Zhou.

Moreover, according to paragraph [0041] of Zhou, if the content ratio of manganese (Mn) to sulphur (S) is excluded from a desired range, a MnS compound is formed in the

intercrystalline, which becomes brittle at a high temperature. However, Zhou does not disclose or suggest any correlation between the content of Mn and the crystal orientation ratio  $I_{(200)}/I_{(111)}$ .

The present specification demonstrates much better results in a heat fatigue test when the crystal orientation ratio  $I_{(200)}/I_{(111)}$  is greater than 100. The present specification states:

According to the information, the number of repetition durability times of the belt obtained by a heat fatigue test is about 130,000 in samples H and I, whose crystal orientation ratios  $I_{(200)}/I_{(111)}$  are less than 50, and does not reach 200,000 being the acceptable quality level. However, the numbers of repetition durability times of samples A-G, whose crystal orientation ratios  $I_{(200)}/I_{(111)}$  are 113, 114, 132, 147, 169, 198 and 246, respectively, are much larger than 200,000, the acceptable quality level.

(Page 5, line 23 to page 6, line 5; *See also* Table 1 and FIG. 3). Table 1 and FIG. 3 show significant increases in the number of repetition durability times when the crystal orientation ratios are over 100 and again when they are over about 150. For example, crystal orientation ratios  $I_{(200)}/I_{(111)}$  of 50, 113 and 169 correspond with repetition durability times of 130,000, 250,000 and 1,000,000 respectively.


For at least the foregoing reasons, the claimed invention distinguishes over the cited art and defines patentable subject matter. Favorable reconsideration is earnestly solicited.

Should the Examiner deem that any further action by applicants would be desirable to place the application in condition for allowance, the Examiner is encouraged to telephone applicants' undersigned attorney.

Amendment Under 37 C.F.R. §1.111  
Serial No. 10/713,103  
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If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,  
**WESTERMAN, HATTORI, DANIELS & ADRIAN, LLP**



Stephen G. Adrian  
Attorney for Applicants  
Registration No. 32,878  
Telephone: (202) 822-1100  
Facsimile: (202) 822-1111

SGA/AGM/mlj